



3

Figure 3 A

Linker 1- Effect length on the absolute signals and background  
in binding of BS-I lectin to Galactose  $\alpha$

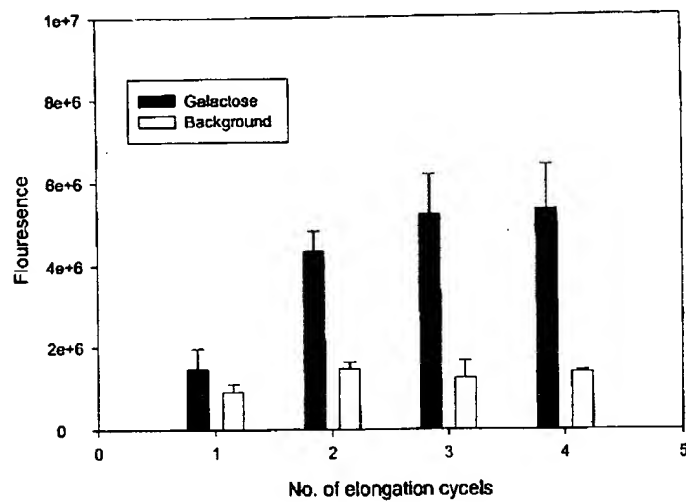
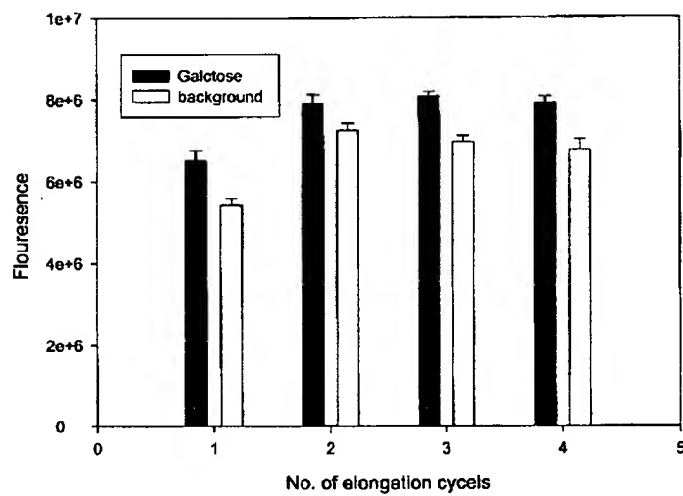


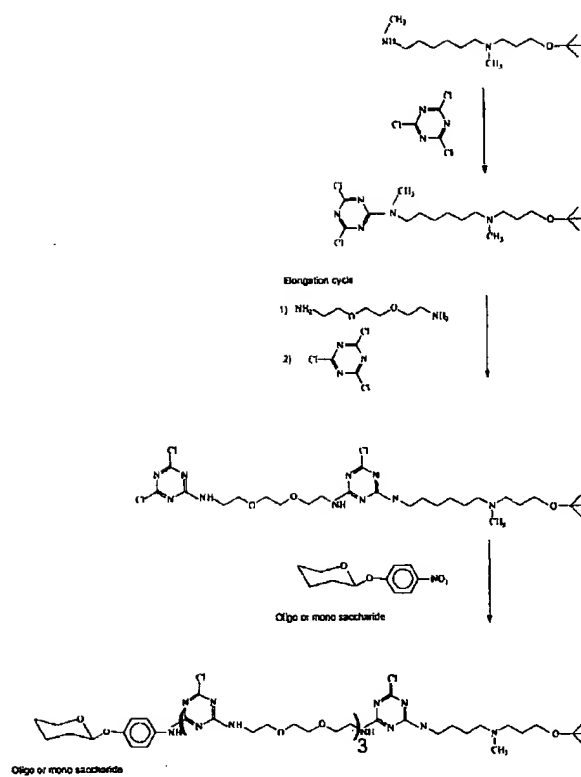
Figure 3 B

Linker 2- Effect length on the absolute signals and background  
in binding of BS-I lectin to Galactose  $\alpha$



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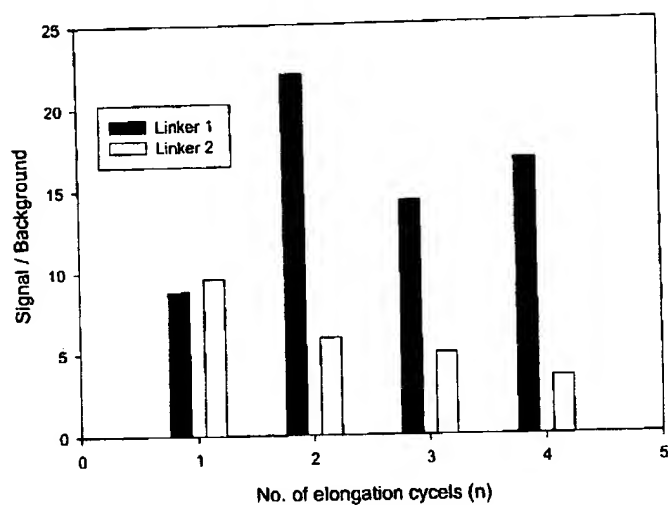
Figure 4



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Figure 5

Effect of linker type and length on the S/B  
in binding of WGA lectin to GlcNAc  $\beta$

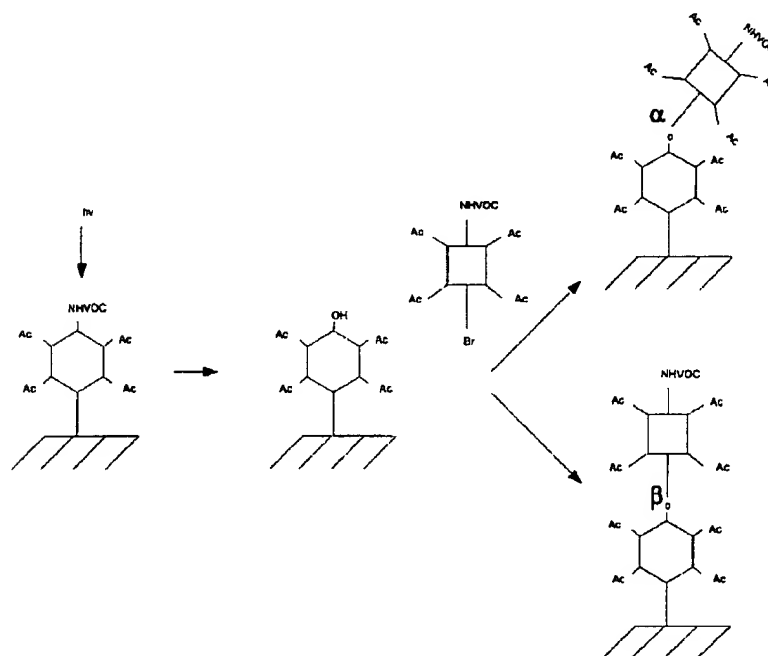


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## Appendix 2

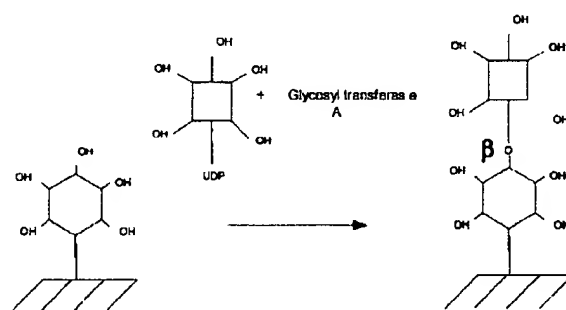
Fodor et al. Chemical synthesis

- When synthesising glycosidic bond chemically the reaction products will include both beta and alpha anomers to some extent. This anomers can be separated since they have to be attached to a solid phase. The final wrry will not be homogenous regarding its stereo-specificity.



Dukler and Dotan enzymatic synthesis

- A product that is stereospecifically homogenous

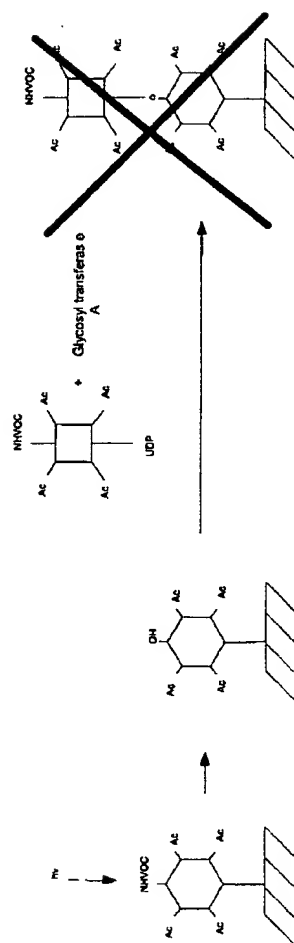


Ac- protection group

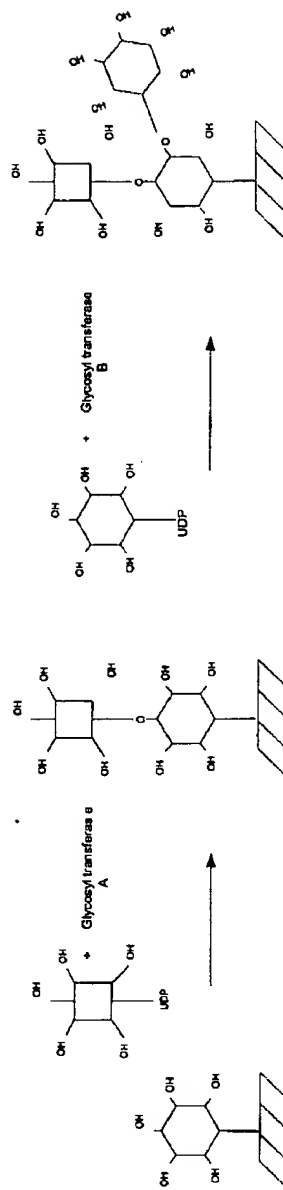
NHVOC- Light sensitive protecting group

OH - Natural hydroxyl on carbohydrate

Enzymatic synthesis combined with control of synthesis location using photo deprotection as suggested by Fodor et al. can not be done because of the following:  
 The glycosyltransferase will not recognise the photoprotected UDP-Sugar donor because it is not its natural substrate. The protected acceptor will not be recognised by the enzyme because it is not its natural substrate.  
 (There are some exceptions for this: few sialyltransferase can tolerate modification on the 9 position of the CMP-sialic donor, and it could not be used as a general method)



Dukler and Dotan - Enzymatic synthesis of branched and linear structures in physically separated locations on the array



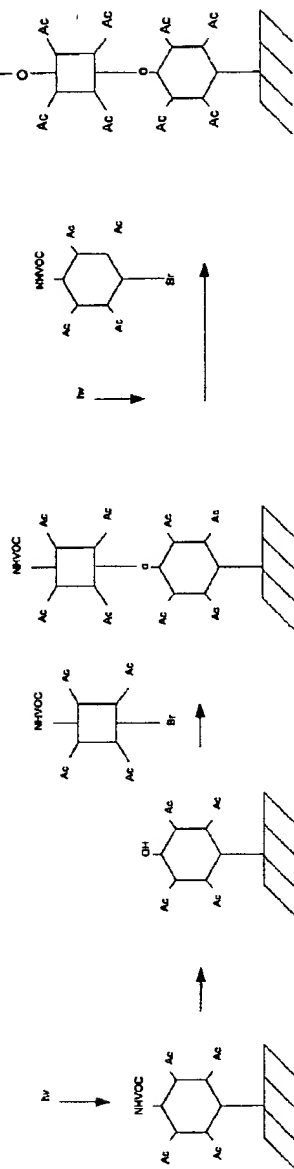
Ac - protection group

NHVOC - Light sensitive protecting group

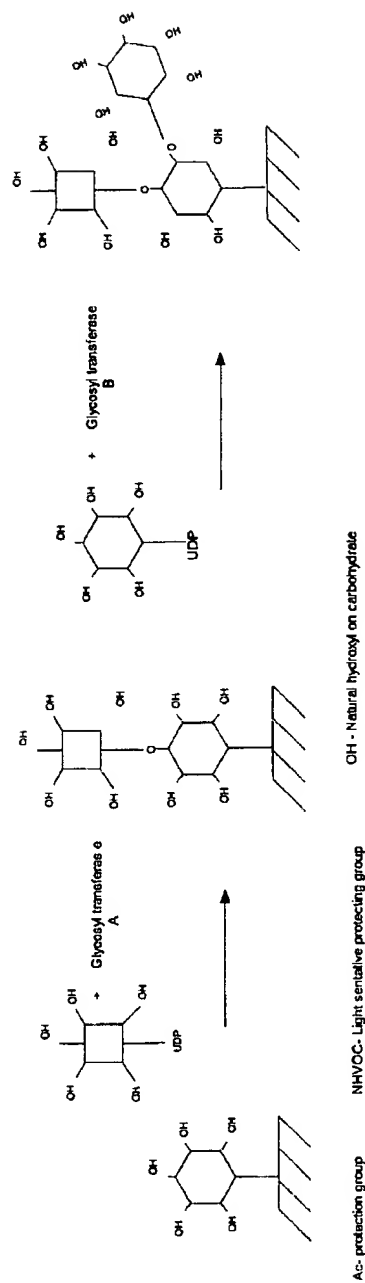
OH - Natural hydroxyl on carbohydrate

Fodor et al. Chemical synthesis  
 - Branched structures can not be synthesized only linear structures, since there is only one position on the added glycan that can be photodeprotected

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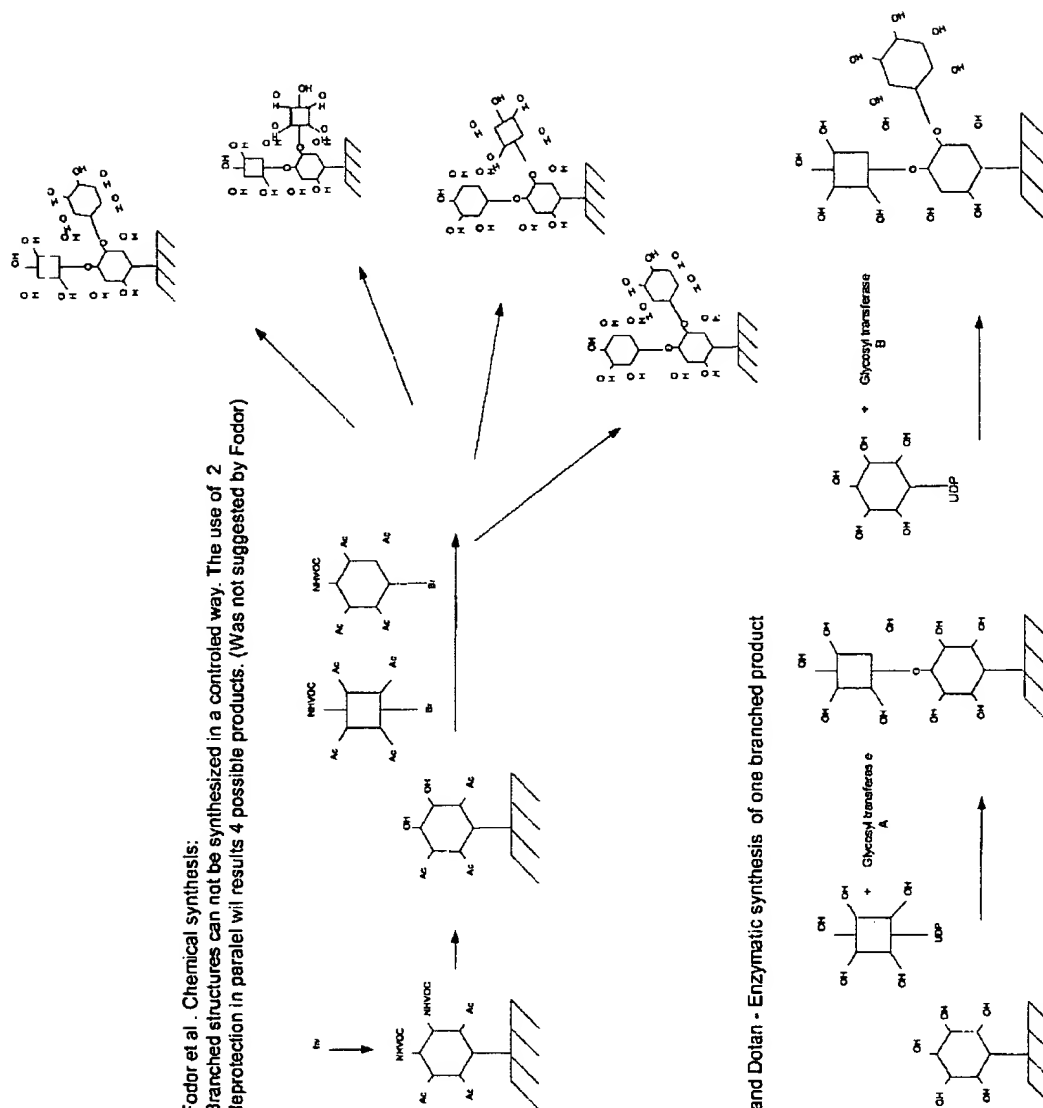


Dukler and Dotan enzymatic synthesis  
 - Branched and linear structures



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Fodor et al. Chemical synthesis:  
Branched structures can not be synthesized in a controlled way. The use of 2  
deprotection in parallel will result in 4 possible products. (Was not suggested by Fodor)



Dukler and Dolan - Enzymatic synthesis of one branched product